

Serial No. 08/902,331

Please amend claim 44 as follows:

44. (Amended) Circular target body, comprising a cylinder-body with a central opening, one end face of said body being symmetrically concavely tapered towards the axis of said cylindrical body through said opening to thereby define a new atomization surface in the form of a concave, substantially bell-shaped sputtering surface, [viewed in a cross-sectional plane along said axis by steadily bent lines,] a backside of said body being formed by a flat annular outer ring-surface and an inwardly recessed flat circular center surface, an amount of taper d_0 being defined by

$$0.2 r_1 \leq d_0 \leq 0.54 r_1$$

wherein r_1 is the radius of said cylindrical body.

REMARKS

With regard to the rejection of claim 37 under 35 U.S.C. §112, ¶1, applicants would point out that the amendment changing " d_0 " to " d_1 " was done to correct an obvious typographical mistake and to conform the claim language to the disclosure. That is, the disclosure does not use " d_0 " to describe any target

Serial No. 08/902,331

body parameter. Instead " d_1 " is used to designate the peripheral thickness of the target body. In this connection, the Examiner's attention is directed to page 7; lines 12 et seq of the Specification where the maximal thickness, d_1 , is disclosed as amounting to about 50% of the target body radius r_1 .

Applicants submit that the above amendments should also render the rejection of claims 36 and 37 under 35 U.S.C. §112, ¶2 moot. The undersigned regrets not having specifically addressed these two claims when dealing with similar issues raised in connection with other claims.

The objection to Sketch A is not understood and in any event is not believed to be well made. In particular, applicants submitted this sketch merely to illustrate minimum and maximum taper. They are not proposing to add it as a figure to the application and/or incorporate a description thereof into the Specification. In fact, it is their position that the range of the taper d_0 claimed in claim 44 is already disclosed or derivable from the original disclosure as set out at pages 4 and 5 of the Response dated March 1, 1999.

For the foregoing reasons, the rejection of claim 44 under 35 U.S.C. §112, ¶1 is traversed. Reconsideration is requested for the following specific reasons.

Applicants agree that the claim sets forth a relationship between the degree of taper, d_0 , and the target body radius, r_1 . They cannot agree, however, that there is no support in their

Serial No. 08/902,331

disclosure for such a limitation. As noted above, their prior response explained how the degree of taper is derived from specific portions of the original disclosure. The final rejection does not appear to take issue with the fact that the d_0/r_1 relationship is derivable from the data originally presented. That relationship is an important component of the claimed invention in claim 44, although we question the use of the term "critical", to characterize it. However categorized, the simple geometrical relationships would have been readily apparent to and implicitly derivable to one skilled in this art which has a high degree of sophistication given the original written description. The derivation of the target taper d_0 would not have required the exercise of undue experimentation as demonstrated by its derivability in under two pages based upon disclosed parameters which the Examiner impliedly concedes are in the original disclosure. Applicants are entitled to the benefit of all patentable teachings properly inferable (in this case, easily inferable) from the disclosure.

The disclosure of any patent application is directed to those of ordinary skill in the art, which in this case is relatively high. The original disclosure in this application describes a sputtering source with a teaching of a variety of dimensioning rules among the substrate, the target of specific configuration (a concave bell-shape) and the source. The person of ordinary skill seeking to make and use applicants' teachings,

Serial No. 08/902,331

particularly the concave, bell-shaped new atomization surface would have thus easily, and of necessity, derived the relationship defined in claim 44 as well as the interrelated dependent claims 35-37. No inventive skill or undue experimentation would have been necessary as the nine simple equations clearly demonstrate.

In order to make sure that there is clear antecedent basis in the disclosure for the terms used in claim 44, applicants propose to incorporate in their specification the simple mathematical derivation (but not the sketch) set out in the prior response. This does not constitute new matter, avoids any argument about the completeness of the written description, and provides unequivocal antecedent basis for the claimed subject matter. The interpretation of the relationship of d_0 and r_1 , with which applicants disagree as discussed below, is in any event not germane to a §112, ¶1 rejection.

Applicants would further note the apparent inconsistency between, on one hand, the §112, ¶1 argument that their disclosure does not describe the "critical limitation" of the taper and, on the other hand, §102(b) argument that Pierce et al patent does disclose the importance of a sputtering surface taper but in only the drawing figures. Applicants will deal with the latter argument below but mention it here to emphasize the use of two different and inconsistent standards.

Serial No. 08/902,331

As to the "steadily bent lines" language in claim 44, applicants propose to delete the language as unnecessary to patentability. Thus entry of the proposed amendments to claim 36, 37 and 44 are properly entered at this point as they reduce the issues should further prosecution of the appeal be necessary without raising further issues requiring reconsideration or search. Applicants further propose to amend claim 44 to make clear that their invention is directed to the target body's surface as a new atomization surface which defines a bell-shaped concave surface.

Finally, the rejection of claims 35-37 and 44 as being anticipated by Pierce et al under 35 U.S.C. §102(b) is traversed, and reconsideration is requested.

The final rejection states that the Pierce et al patent teaches a target body which "demonstrates" the specified target parameters in the rejected claim. This is an error for at least several reasons. First, Fig. 3a of Pierce et al shows a circular target assembly but it is not reasonable to interpret that assembly as having a concavely substantially bell-shaped sputtering surface. The uneroded surface profile 213 of that assembly, which is the same as the conventional profile 13 shown in Figs. 1a and 1b is a convex shape, not a concave bell-shape. It is produced by intersecting cone-ring surfaces having different taper angles. As such, the Pierce et al assembly

Serial No. 08/902,331

produces a completely different sputtering characteristic from the target body of the present invention.

Applicant would further point out another structural difference, i.e., Pierce et al also do not teach a target body whose back surface is formed by an inwardly recessed flat circular center surface.

There is no basis upon which to conclude that the convex sputtering surface of Pierce et al will produce during sputtering a new atomization surface which is concavely bell-shaped and more importantly achieve the taper between the ranges set forth in claim 44. In this connection, the final rejection refers to Fig. 2b of Pierce et al which shows an atomization surface which, if considered concave, is not reasonably construed as substantially bell-shaped.

The final rejection refers to col. 11, line 12 of Pierce et al. for support of the maximum height dimension of 22.4mm. Of course, this is not the same dimension as d_0 , but rather corresponds to d_1 . Applicants further note that the final rejection relies upon Pierce et al as containing a teaching of all the elements of claims 35-37 and 44. Thus, it is not appropriate to contend that the features of claim 44 are present in Pierce et al by using applicants' own relationship is well known to one of ordinary skill in the art. Such a position does not support a prima facie case of obviousness, let alone a case of anticipation. Whereas applicants teach a way of achieving

Serial No. 08/902,331

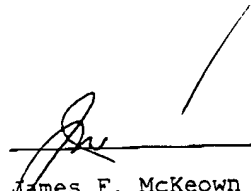
improved sputtered off material distribution and improved homogeneity of sputter depiction rate, Pierce et al do not.

Accordingly, entry of the proposed amendments and favorable action upon the care are earnestly solicited.

It is respectfully requested that, if necessary to effect a timely response, this paper be considered as a Petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #622/42052DV).

Respectfully submitted,

January 20, 2000


James F. McKeown
Registration No. 25,406

EVENSON, MCKEOWN, EDWARDS
& LENAHAAN, P.L.L.C.
1200 G Street, N.W., Suite 700
Washington, DC 20005
Telephone No.: (202) 628-8800
Facsimile No.: (202) 628-8844

JFM:blp